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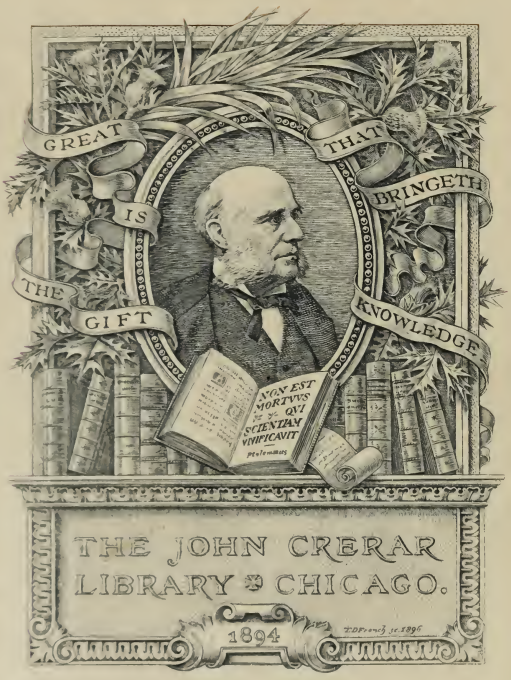
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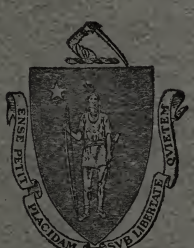
CATALOGUE

OF THE

MASSACHUSETTS

AGRICULTURAL COLLEGE



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CATALOGUE

OF THE

MASSACHUSETTS AGRICULTURAL COLLEGE

1903-1904

AMHERST
PUBLISHED BY THE COLLEGE
1903

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Press of Carpenter & Morehouse,
Amherst, Mass.

Calendar for 1903-1905

1903			
September	17	THURSDAY	First semester began at 8 A. M.
November	26	THURSDAY	Thanksgiving Day
December	23	WEDNESDAY	Holiday recess begins
1904			
January	6	WEDNESDAY	8 A. M. Holiday recess ends
February	3	WEDNESDAY	First semester ends
February	4	THURSDAY	8 A. M. Second semester begins
March	30	WEDNESDAY	Spring recess begins
April	5	TUESDAY	8 A. M. Spring recess ends
June	11	SATURDAY	Grinnell prize examination of senior class in Agriculture
June	12	SUNDAY	Baccalaureate sermon
June	13	MONDAY	Flint prize oratorical contest Burnham prize speaking
June	14	TUESDAY	Meeting of the alumni Class day exercises, battalion drill, reception by the president and the trustees
June	15	WEDNESDAY	Commencement exercises
June	16, 17	THURSDAY AND FRIDAY	8-30 A. M. Examinations for admission at Botanic Museum, Amherst; Jacob Sleeper Hall, Boston University, 12 Somerset Street, Boston; Pittsfield; Horticultural Hall, Worcester

Vacation of Thirteen Weeks

September	13, 14	TUESDAY AND WEDNESDAY	8-30 A. M. Examinations for admission, Botanic Museum
September	15	THURSDAY	8 A. M. First semester begins
November	24	THURSDAY	Thanksgiving Day
December	21	WEDNESDAY	Holiday recess begins
1905			
January	4	WEDNESDAY	8 A. M. Holiday recess ends
February	1	WEDNESDAY	First semester ends
February	2	THURSDAY	8 A. M. Second semester begins

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Origin, Object, and Location

The Massachusetts Agricultural College was among the first of the institutions to be established under the provisions of the National Land-Grant Act of 1862. This Act donated "public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts." The framer of this bill was the late Senator Justin Smith Morrill of Vermont. At the present time over sixty institutions of higher learning in this country directly owe their origin or their prosperity to the benefits of this great educational measure.

The college was incorporated in 1864 by an Act of the State Legislature; and on the second of October, 1867, was formally opened to an entering class of thirty-three.

In January, 1875, an arrangement was made with the authorities of Boston University, whereby the college, without losing its independence, should thereafter become the "School of Agriculture" of the university. By means of this arrangement, students of the Massachusetts Agricultural College, besides obtaining the regular diploma of the college, which is accepted by American universities and by the University of Göttingen, in Germany, may, upon payment of a fee, and under certain conditions, receive the diploma in science awarded to graduates of the Boston institution. In 1882 the State Experiment Station was located on the college grounds. The station has since become connected with the college.

The college offers a free education to any American student who may be of good character and who may fulfil the requirements for admission. Women are admitted to the courses of

the institution with a few exceptions on the same conditions as men. It also offers its courses of study to foreign students upon payment by them of a tuition fee. It gives a four years' course leading to the degree of Bachelor of Science, and graduate courses leading to the degrees of Master of Science and of Doctor of Philosophy. It also offers winter courses of ten weeks, and a special course of two weeks in bee culture.

The college is situated in the beautiful town of Amherst. The grounds are especially attractive, and comprise over 400 acres of land, lying about a mile north of the village center. The equipment of the college, both in buildings and facilities for instruction, is excellent.

Amherst is ninety-seven miles west of Boston. It is on the line of the Southern Division (Central Massachusetts Railroad) of the Boston and Maine Railroad, as well as on that of the Central Vermont Railroad. It is easily accessible.

The Corporation

	Term expires
HENRY S. HYDE, Springfield	1904
MERRITT I. WHEELER, Great Barrington	1904
WILLIAM R. SESSIONS, Springfield	1905
CHARLES L. FLINT, Brookline	1905
WILLIAM H. BOWKER, Boston	1906
GEORGE H. ELLIS, Boston	1906
J. HOWE DEMOND, Northampton	1907
ELMER D. HOWE, Marlborough	1907
NATHANIEL I. BOWDITCH, Framingham	1908
WILLIAM WHEELER, Concord	1908
ELIJAH W. WOOD, West Newton	1909
CHARLES A. GLEASON, New Braintree	1909
JAMES DRAPER, Worcester	1910
SAMUEL C. DAMON, Lancaster	1910

MEMBERS EX OFFICIO

His Excellency JOHN L. BATES
Governor of the Commonwealth

HENRY H. GOODELL
President of the College

Secretary of the Board of Education

J. LEWIS ELLSWORTH
Secretary of the Board of Agriculture

OFFICERS OF THE CORPORATION

His Excellency Governor JOHN L. BATES	Boston
President	
WILLIAM R. SESSIONS	Springfield
Vice-President	
J. LEWIS ELLSWORTH	Boston
Secretary	
GEORGE F. MILLS	Amherst
Treasurer	
CHARLES A. GLEASON.	New Braintree
Auditor	

Board of Overseers

STATE BOARD OF AGRICULTURE

EXAMINING COMMITTEE OF OVERSEERS

John Bursley (Chairman) . . .	West Barnstable
Charles K. Brewster	Worthington
Warren C. Jewett	Worcester
Arthur A. Smith	Colrain
Charles H. Shaylor	Lee

Faculty

HENRY H. GOODELL, LL.D.
President of the College

LEVI STOCKBRIDGE
Professor of Agriculture, Honorary

CHARLES A. GOESSMANN, PH.D., LL D.
Professor of Chemistry

CHARLES WELLINGTON, A.M., PH.D.
Associate Professor of Chemistry

CHARLES H. FERNALD, A.M., PH.D.
Professor of Zoölogy

REV. CHARLES S. WALKER, A.M., PH.D.
Professor of Political Science, Chaplain, and Secretary of the Faculty

WILLIAM P. BROOKS, PH.D.
Professor of Agriculture

GEORGE F. MILLS, A.M.
Professor of English and Latin

JAMES B. PAIGE, D.V.S.
Professor of Veterinary Science

GEORGE E. STONE, PH.D.
Professor of Botany

JOHN E. OSTRANDER, A.M., C.E.
Professor of Mathematics and Civil Engineering

HENRY T. FERNALD, M.SC., PH.D.
Professor of Entomology

JOHN ANDERSON, CAPTAIN, U.S.A.
Professor of Military Science and Tactics

FRANK A. WAUGH, M.SC.
Professor of Horticulture

RICHARD S. LULL, M.SC., PH.D.
Associate Professor of Zoölogy, and Curator of the Zoölogical Museum

PHILIP B. HASBROUCK, B.SC.
Associate Professor of Mathematics and Adjunct Professor of Physics

*HERMAN BABSON, A.M.
Assistant Professor of English

FRED S. COOLEY, B.SC.
Assistant Professor of Agriculture

S. FRANCIS HOWARD, M.SC.
Assistant Professor of Chemistry

ROBERT W. LYMAN, LL.B.
Lecturer on Farm Law

LOUIS R. HERRICK, B.SC.
Instructor in Modern Languages

HOWARD L. KNIGHT, B.SC.
Instructor in English

GEORGE F. FREEMAN, B.SC.
Instructor in Botany

GEORGE O. GREENE, M.SC.
Instructor in Horticulture

FRANCIS CANNING
Instructor in Floriculture

— — —

Instructor in Chemistry

E. FRANCES HALL
Librarian

**Absent on leave*

RICHARD S. LULL, M.SC., PH.D.
Registrar

ELISHA A. JONES, B.SC.
Superintendent of Farm

NEWTON WALLACE
Electrician

P. E. NAYLOR
Steward of Dining Hall

Committees of the Faculty

Instruction: Professors MILLS, OSTRANDER, WELLINGTON, HASBROUCK, the REGISTRAR

Electives: Professors C. H. FERNALD, BROOKS, PAIGE, HASBROUCK and BABSON

Athletics: Professors PAIGE, BROOKS, ANDERSON and HOWARD

Catalogue: Professors WALKER and OSTRANDER, Mr. HERRICK, and the REGISTRAR

Entrance Examinations: Professors HASBROUCK, LULL and BABSON

Rules: Professors WALKER, LULL and HOWARD

Graduate Courses: Professors C. H. FERNALD, WELLINGTON, STONE and H. T. FERNALD

Schedule: Professors OSTRANDER and HASBROUCK

Dining Hall: Professors MILLS and HASBROUCK

Chairman of the meetings of the instructors of the several classes

Senior class: Professor MILLS

Junior class: Professor WELLINGTON

Sophomore class: Mr. HERRICK

Freshman class: Professor HASBROUCK

Admission

Every candidate for admission must be at least sixteen years of age, and must present a testimonial of good character from the principal of the last school that he attended.

FOUR-YEARS' COURSE

Candidates for admission to the freshman class will be received on certificate, as explained below, or on examination in the following subjects:

Algebra, through quadratics. Plane geometry. English. General history, Myers' *General History*. Civil government, Mowry's *Studies in Civil Government*. Physiology, Martin's *The Human Body*, briefer course. Physical geography.

This examination may be oral or written; the standard required for passing is 65 per cent. in each subject. Knowledge of the principles of arithmetic is presupposed, although an examination in this subject is not required. Inasmuch as it is found that candidates are frequently deficient in algebra and geometry, they are urged to obtain such drill in these subjects as shall secure accuracy and readiness in the application of principles to practical examples; furthermore no student found unsatisfactory in both of these subjects will be admitted to the college.

A candidate will not be accepted in English whose work is notably deficient in point of spelling, punctuation, phraseology, or division into paragraphs. The candidate will be required to present evidence of a general knowledge of the subject-matter of books named below, and to answer questions on the lives of their authors. The form of examination will usually be the writing of a paragraph or two on each of several topics to be chosen by the candidate from a considerable number—perhaps ten or fifteen—set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will imply only a general knowledge of the substance of the books. The books set for

examination in 1904 and 1905 are: Shakespeare's *The Merchant of Venice;* Goldsmith's *The Vicar of Wakefield;* Scott's *Ivanhoe;* Tennyson's *The Princess;* Lowell's *The Vision of Sir Launfal;* George Eliot's *Silas Marner.*

TIME, PLACES, AND ORDER OF EXAMINATIONS

The regular examinations for admission in 1904 will be held in the Botanic Museum of the Agricultural College, in Amherst, on Thursday and Friday, June 16 and 17, and on Tuesday and Wednesday, September 13 and 14, as follows:

First day:	8-30 A. M.	Registration
	9-00 A. M.	English
	11-00 A. M.	General history
	2-00 P. M.	Geometry
Second day:	9-00 A. M.	Civil government
	10-00 A. M.	Algebra
	2-00 P. M.	Physiology
	3-00 P. M.	Physical geography

Entrance examinations in June will be held on the same days and in the same order as in Amherst, at Jacob Sleeper Hall, Boston University, 12 Somerset Street, Boston; at Horticultural Hall, Worcester, and at Pittsfield. Candidates may be examined and admitted at any other time in the year.

Preliminary examinations in one or more of the required subjects may be taken a year before the candidate expects to enter college, and credit for successful examination in any subject will stand for two years after the examination.

ADMISSION ON CERTIFICATE

Certificates of schools and academies approved by the faculty of the college are accepted in place of examinations. These certificates must be made out on blanks furnished by

the registrar to the principal on application, and must be signed by the principal of the school making such application. Students entering on certificate may offer physics or chemistry in place of physiology or physical geography.

A student admitted on certificate may be dropped from college at any time during freshman year, when his work is not satisfactory; and the privilege implied in the acceptance of a certificate may be revoked whenever, in the judgment of the faculty, the student, either through lack of ability or of application, fails to attain the standard required.

ADMISSION TO ADVANCED STANDING

Candidates for classes more advanced than the freshman class will be examined in the studies which have been pursued by the class to which they desire admission.

Courses of Instruction

FOR THE DEGREE OF BACHELOR OF SCIENCE

AGRICULTURE

Introductory. Relations of federal and state governments to agriculture, four lectures. History of agriculture, tenure of land, rents, holdings, etc., six lectures.

Freshman year, first semester, three hours a week, required; Animal breeding. Shaw's *Breeding Animals*, lectures and discussion of principles of breeding. Assistant Professor COOLEY

Sophomore year, seven weeks, first semester, four exercises a week in class room, required; breeds of farm live stock; sheep, cattle. Lecture syllabus by Cooley, and Curtis' *Horses, Cattle, Sheep and Swine.* Assistant Professor COOLEY

Sophomore year, nine weeks, first semester, four exercises a week in class room, required; horses and swine. Lecture syllabus by Cooley, and Curtis' *Horses, Cattle, Sheep and Swine.* Assistant Professor COOLEY

Sophomore year, eight weeks, second semester, three hours a week, required; dairying. Lectures on dairy farming, milk production, handling and marketing of milk, milk preservation and modification, and products of milk. Text-book, Wing's *Milk and Its Products.* Assistant Professor COOLEY

Sophomore year, ten weeks, second semester, required; soils: formation, classification, composition; physical and chemical characteristics, and their relations to maintenance and increase in productiveness. Brooks' *Agriculture*, Vol. I, supplemented by lectures and laboratory work. Professor BROOKS

Junior year, ten weeks, first semester, elective; methods of soil improvement, including tillage, drainage, and irrigation. Brooks' *Agriculture*, Vol. I, supplemented by lectures, laboratory work, and practical exercises. Professor Brooks

Junior year, four weeks, first semester, elective; manures; production, composition, properties, adaptation and use. Brooks's *Agriculture*, Vol. II, supplemented by lectures and practical exercises. Professor Brooks

Junior year, four weeks, first semester, elective; stock judging. Assistant Professor Cooley

Junior year, second semester, elective; fertilizers, including a critical study of their production, composition, properties, adaptation and use; and green manuring. Brooks' *Agriculture*, Vol. II, supplemented by lectures, laboratory work and practical exercises. Professor Brooks

Senior year, four weeks, first semester, four hours a week, elective: silos and ensilage: historical development; the merits and methods of construction of the different kinds of silos; the crops suited for ensilage; ensilage machinery: the methods of filling the silo; and the nature and extent of the changes taking place in ensilage as affecting food value. Lectures, books of reference, and practical exercises.

Professor Brooks

Senior year, seven weeks, first semester, four hours a week, elective; feeding animals: principles of digestion and animal nutrition, a study of feeding stuffs (coarse and concentrated). The relation of food to product; compounding rations. Armsby's *Cattle Feeding*, lectures and discussion.

Assistant Professor Cooley

Senior year, seven weeks, first semester, four hours a week, elective; dairying: selection and management of the dairy farm,

dairy cattle, chemical and physical properties of milk, etc., cream, butter, cheese, and by-products.

Assistant Professor Cooley

Senior year, first and second semester, two exercises a week, for ten weeks; dairy practice; use of separators, Babcock tester, butter making, etc. Specialists

Senior year, second semester, elective; the crops of the farm and crop rotation: including a study of the origin and agricultural botany of all the leading crops of the farm; annual forage crops, grasses and legumes, cereals, root-crops, vegetables, tobacco, and other special commercial crops. The production and use of each; the varieties and methods of improvement; the adaptation to soil; the special manurial requirements; and the methods of raising and harvesting are considered. Lectures, reference books, and field work.

Professor Brooks

Senior year, second semester, elective; agricultural experimentation: objects, methods, sources of error; interpretation of results. Lectures and study of reports, bulletins, etc.

Professor Brooks

Senior year, second semester, elective; farm management: selection of the farm, its subdivisions and equipment, buildings, fences, roads, water supply; farm capital, permanent, perishable, and floating. The labor of the farm and its management; farm power and farm machinery. Lectures and practical exercises. Professor Brooks

Seminar courses, by arrangement, for advanced students.

Special problems requiring experiment or other research investigation will be assigned to students fitted for and desiring such work.

Training and practice in the use of farm implements and machines by arrangement when desired.

HORTICULTURE

This department endeavors to give the student a working knowledge of horticulture on its practical and on its scientific side. The attempt is made to inculcate a taste and an enthusiasm for horticultural pursuits, in place of distaste and dislike for the drudgery of farm life. On these things success and further progress chiefly depend.

The courses now offered are as follows, though others will be added as occasion requires:

1. *Sophomore class*, second semester. The fundamental operations of horticulture—propagation, pruning and cultivation—as related to the physiology of the plant. During the first half of this course Bailey's Nursery Book is used as a text. Mr. GREENE

2. *Junior year*, first semester. Pomology. This course covers the three natural divisions of the subject, viz.: (a) systematic pomology, or the study of the fruits themselves, (b) practical pomology, or the practice of fruit growing, (c), commercial pomology, or the principles underlying the marketing of fruits. The course is pursued by means of text-book, lectures, laboratory and field exercises. Mr. GREENE.

3. *Junior year*, first semester, four periods weekly. Plant breeding. Based on a thorough examination of the laws of heredity and of variation and of the principal theories of evolution. Lectures, accompanied by practice and direct experiments in crossing and hybridizing plants. Professor WAUGH

4. *Junior year*, second semester, four periods weekly. Market gardening, including vegetables and small fruits. Locations, soils, methods of cultivation and marketing. Text-book Bailey's *Principles of Vegetable Gardening*, lectures and field exercises. Mr. GREENE

5. Individual problems will be assigned to seniors who elect horticulture. This gives the student an opportunity for specialization in various lines of fruit growing, vegetable culture, greenhouse management, landscape gardening, etc.

Professor WAUGH, Mr. GREENE and Mr. CANNING

A seminar, made up of all students electing advanced work in horticulture or landscape gardening, meets at regular intervals for the discussion of any matters pertaining to the subject. Successful and noted horticulturists from outside the college are frequently present at these meetings to speak on the topics with which they are especially identified.

LANDSCAPE GARDENING

The college wishes to promote the work in landscape gardening in every way possible. The aim of the courses is to give the general student an understanding of the fundamental principles of design and of good taste as applied to gardening; and to prepare advanced students for the practice of landscape gardening in its various branches.

Although a variety of other work along related lines is available, the courses now definitely offered are as follows:

1. *Junior year*, four periods weekly. Materials. This course is designed to give the student an intimate acquaintance with the trees, shrubs and other plants used in landscape gardening. Professor WAUGH and Mr. CANNING

2. *Junior year*, second semester, four hours a week. Elements of landscape design. The fundamental principles underlying the artistic development of parks, estates, gardens and other areas, together with some of the simpler applications to practical conditions. During the first half of the term Waugh's *Landscape Gardening* will be used as a text.

Professor WAUGH

3. *Senior year*, first and second semesters, four laboratory periods weekly. Advanced landscape gardening. Lectures, conferences, field exercises, and extensive practice work with criticism. The student is given definite problems to solve, these problems being arranged in such an order as to develop the subject logically in the student's mind.

Professor WAUGH and Mr. CANNING

CHEMISTRY

This course aims to inculcate accurate observation, logical thinking, systematic and constant industry, together with a comprehensive knowledge of the subject. Instruction is given by text-book, lectures, and a large amount of laboratory work under adequate supervision. The laboratory work at first consists of a study of the properties of elementary matter, analysis of simple combinations, and their artificial preparation. This is followed by a quantitative analysis of salts, minerals, soils, fertilizers, animal and vegetable products. The advanced instruction takes up the chemistry of various manufacturing industries, especially those of agricultural interest, such as the production of sugar, starch, and dairy products; the preparation of animal and plant foods, their digestive assimilation and economic use; the official analysis of fertilizers, fodders and foods; and the analysis of soils, waters, milk, wine, and other animal and vegetable products.

The courses are as follows:

Freshman year, second half of second semester, four hours a week; general chemistry, part 1, principles of chemistry, non-metals. Newth's *Inorganic Chemistry*.

Assistant Professor HOWARD

Sophomore year, first semester, six hours a week; general chemistry, part 2, metals. Assistant Professor HOWARD

Second semester, five hours a week ; subject continued, dry analysis. Assistant Professor HOWARD

Junior year, first semester, eight hours a week ; qualitative and quantitative analysis, organic chemistry. Four hours a week ; special subject. Professor WELLINGTON

Second semester, ten hours a week ; organic chemistry. Remsen's *Organic Chemistry*. Five hours a week ; special subject. Professor WELLINGTON

Senior year, (elective), first semester, three hours a week ; chemical industries. Professor GOESSMANN

Eight hours per week ; quantitative analysis and physical chemistry, Reychler-McCrae's *Physical Chemistry*.

Professor WELLINGTON and Assistant Professor HOWARD

Second semester, eight hours a week ; advanced work with lectures. Professor WELLINGTON

GEOLOGY

1. Mineralogy, *Junior year*, first semester, seven weeks, three hours a week. A course of systematic determinative mineralogy based on Brush's *Manual*. This work is carried on in the laboratory and consists in determining the minerals by a study of lustre, fusibility, hardness, color, streak, specific gravity, etc., and by some of the simpler chemical tests.

Assistant Professor HOWARD

2. Geology, *Junior year*, second semester, eleven weeks, three hours a week. Dynamical, structural, and historical geology based upon recitations assigned from Scott's *Introduction to Geology*. Topics in economic geology are also assigned, mainly from Tarr's *Economic Geology*, to each member of the class in turn, upon which the student is expected to report. Ample opportunity for illustration is afforded by the museum collection and excursions in the Connecticut valley. Professor LULL

ZOÖLOGY

1. Anatomy and Physiology.—*Freshman year*, one-half of the second semester, four hours a week. Martin's *The Human Body* (advanced course) is used as a text-book, from which recitations are assigned, supplemented by lectures and demonstrations, illustrated by means of anatomical models and charts.

Professor LULL.

2. Zoölogy, *Sophomore year*, first semester, one lecture and recitation and one laboratory period each week. This course aims to give a brief general survey of the animal kingdom and consists of a series of laboratory studies of a number of different types illustrative of the principal groups, supplemented by a lecture course amply illustrated by the very complete museum collection. Recitations, both oral and written, are assigned upon the knowledge gained in the laboratory, from the lectures, and from Parker and Haswell's *Manual of Zoölogy*.

Professor LULL.

3. Zoölogy, *Junior year* (elective for students in the biological course) first semester, four exercises of two hours each, second semester three exercises of two hours each. A course in systematic zoölogy based upon Parker and Haswell's Text-Book of Zoölogy. The laboratory course embraces the morphology of an ample series of forms representative of the different types of animals, considerable attention being paid to anatomical and histological methods as well as to the knowledge gained thereby. Lectures and recitations are of the nature of informal discussions. Professor LULL

POLITICAL SCIENCE

The purpose of the entire course is to fit the student to understand the economical and political movements of his time, so that he may successfully solve the problems confronting him.

Economics, *Junior year*, second semester, four hours a week. 1. The elements of political economy are taught by means of text-book (this year F. A. Walker's *Political Economy*, *Briefer Course*) and lectures, the aim being to make the student familiar with the generally accepted facts, definitions, principles and laws of the science; and to train him to criticize theories, scrutinize facts, and weigh arguments. 2. The industrial history of England and of the United States is studied. Gibbins' *Industrial History of England* is used. 3. The following elective courses are offered: economics of agriculture; banks and banking; problems of the currency; trusts or monopolistic corporations; transportation; socialism. 4. Practical economics. Each member of the class selects for investigation a question, in which he is interested, and devotes two or three months to its solution.

Papers giving the results of research, prepared by members of the class, are read, and discussed by the students. Each student is asked to explain and defend from criticism the statements and the conclusions made in the paper he presents. The department has at its disposal a working library and a collection of material for the use of students.

Professor WALKER

Constitution of the United States, *Senior year*, four hours a week during half of the first semester and the whole of the second semester. 1. Political institutions. By use of text-book (Woodrow Wilson's *The State*) and lectures, the student is led to understand what is the government, municipal, state, and federal, now existing in the United States. This government is compared and contrasted with the governments of England, France and Germany. Care is taken to familiarize the student with the practical methods of legislation, of nominating conventions, of elections, and of administration. 2.

Constitutional history of England and of the United States, with discussions relating to the origin, nature, scope, and purpose of government. Professor WALKER

Lectures on law, second semester, one hour a week. This course treats of laws relating to business, especially to business connected with rural affairs, citizenship, domestic relations, farming contracts, riparian rights, real estate, and common forms of conveyance. Practical work is required such as may fit one to perform the duties of a justice of the peace.

Mr. LYMAN

ENGLISH

This department aims to secure: (a) ability to give written and oral expression of thought in correct, effective English; (b) acquaintance with the masterpieces of American and English literature; (c) ability to present, logically and forcibly, oral and written arguments on propositions assigned for debate.

The following courses are offered: under (a) rhetoric and oratory; under (b) American literature and English literature; under (c) argumentation. The elective course in senior year is in language and literature.

1. Rhetoric. This course extends through the two semesters of freshman year, and through the second semester of sophomore year. In the first semester of freshman year, work is confined to essay writing and to personal criticism, by the instructor, of the students' compositions. This criticism is offered at stated intervals to each student individually, according to a posted schedule of appointments. At the beginning of the semester necessary information with regard to the preparation of essays is furnished each student. In the second semester of freshman year, the study of literary types is undertaken in the form of class-room work in prose composition,

including exposition, persuasion, narration, description, and in prose diction, including usage and style. Special attention is given to the training of the inventive ability of the student. The text-book used is Baldwin's *College Manual of Rhetoric*. In the second semester of sophomore year, individual work in essay writing is again taken up, largely based upon the previous work of the class in American literature. (See 3 below.) Here also personal criticism is offered. Mr. KNIGHT

2. Oratory. Individual drill in declamation, first in private and then before the class, is given during the second semester of freshman year. The choice of speakers for the Burnham prizes is based upon this work. In the junior year, during the first semester, at least two orations, upon subjects assigned or chosen, are written, and delivered before the class. Every oration is criticised by the instructor before it is committed to memory by the student. The choice of speakers for the Flint prizes in oratory is based upon this work. Mr. KNIGHT

3. Literature. American literature is studied in the first semester of sophomore year, four hours a week. The course comprises, first, the careful study of a text-book, (Newcomer's *American Literature*,) together with recitations based upon the same; secondly, the taking of notes from lectures, dwelling upon topics not fully treated in the text-book; and thirdly, the reading outside of the class-room of assigned selections from the prose and poetical works of standard American authors.

Mr. KNIGHT

The history of English Literature is studied during the second semester of sophomore year, four hours a week. The work is based upon a text-book, this year Johnson's *History of English and American Literature*. The topical method is followed in recitation, and instead of formal lectures, there are discussions of points requiring a fuller development than the

text-book gives. Collateral readings of literature are required. Frequent written tests are given in which particular attention is given to (a) the definition of words used in the text-book; (b) the use of English in the development of the topics unfolded in the text-book or discussed in the class-room.

Professor Mills

4. Argumentation. Four hours a week during the first semester of junior year are given to written and oral argumentation. The course is outlined as follows: (a) principles of argumentation as laid down in a text-book or by lecture; (b) briefs and brief-making; (c) briefs developed into forensics and submitted for personal criticism; (d) debates.

Professor Mills

Senior elective course, two semesters, four hours a week. The work in this course is upon the following subjects: (a) English language, its origin, history, and development, with particular attention to the study of words as outlined in Anderson's *A Study of English Words*; (b) English literature, principally of the eighteenth and nineteenth centuries.

Professor Mills

VETERINARY SCIENCE

The course of instruction in veterinary science has been arranged to meet the demands of the students, who, after graduation, purpose following some line of work in practical agriculture. Particular stress is laid upon matters relating to the prevention of disease in animals. In addition, the interests of prospective students of human and comparative medicine have been taken into account in the arrangement of the course of study. The subject is taught by lectures, laboratory exercises, demonstration, and clinics.

Senior year, (elective), first semester, four hours a week;

veterinary hygiene, comparative (veterinary) anatomy, general pathology. Professor PAIGE

Second semester, four hours a week; veterinary materia medica and therapeutics; theory and practice of veterinary medicine; general, special, and operative surgery; veterinary bacteriology and parasitology; medical and surgical clinics.

Professor PAIGE

The instruction in bacteriology is given by means of lectures, recitations, and laboratory exercises. The object of this course of study is to acquaint the student with the various organisms found in air, water, soil, milk, and the body, and their relation to such processes as decomposition, fermentation, digestion, and production of disease. The toxic substances resulting from the growth of organisms are considered, as well as the antitoxines used to counteract their action.

Senior year, half of the first semester, four laboratory exercises of two hours each a week. Required. Professor PAIGE

BOTANY

The object of the course in Botany is to teach those topics pertaining to the science which have a bearing upon economic and scientific agriculture. The undergraduate work extends through six semesters. The first two semesters are required. An outline of the course follows:

Freshman year, first semester, five hours a week; laboratory work and lectures. Histology and physiology of the higher plants. This includes a study of the minute structure of the plant organism, such as stems, roots, leaves, seeds, etc., together with their function and chemical and physical properties. This course extends into the next semester.

Mr. FREEMAN

Freshman year, second semester, three hours a week. Laboratory work, lectures, and text-book. Outlines of classification and morphology of the higher plants. This course follows the preceding one, and commences about the first of March. It is devoted to a study of the relationship of plants, their gross structure, together with extensive individual practice in flower analysis. An herbarium of 200 species of plants is required.
Mr. Freeman

Junior year, first semester, five hours a week, two laboratory exercises and one lecture period a week. Cryptogamic botany. This includes a study of the lower forms of plant life necessary for a comprehension of the following courses. Mr. Freeman

Junior year, second semester, five hours a week, two laboratory exercises and one lecture period a week. Elements of vegetable pathology and physiology. This course includes a study of the common fungus diseases of crops, and consideration of the method of prevention and control of the same. The plant's function as related to susceptibility to disease is also taken up. All of the junior botany is included in four of the junior elective courses. Professor Stone

Senior year, (elective), both semesters, three laboratory exercises and one lecture period a week. (a) Plant physiology. (b) Plant pathology. Either course is optional. This course is adapted to students who desire a more detailed knowledge of plant diseases and plant physiology. Extensive use is made of the valuable and constantly increasing experiment station literature. Professor Stone

MATHEMATICS, PHYSICS, AND ENGINEERING

This department has charge of the instruction in mathematics, physics, civil engineering, and drawing. The aim is to secure thorough work in the fundamental principles and train

the mind in clear and logical thinking. The application of the subjects to practical problems is given special attention. The work of the department extends over the four years as outlined below.

MATHEMATICS

Freshman year, first semester, five hours a week; higher algebra, including ratio and proportion, progressive binomial theorem, series undetermined coefficients, logarithms, continued fractions, permutations. Wells' *College Algebra*.

Professor HASBROUCK

Second semester, two hours a week; solid geometry. Wells' *Solid Geometry*. Professor HASBROUCK

Plane trigonometry, two hours a week. Phillips and Strong's *Elements of Trigonometry*. Professor HASBROUCK

Junior year, for mathematical and chemical students, first semester, four hours a week; analytic geometry of the line, circle, conic sections and higher plane curves. Wentworth or Bowser's *Analytic Geometry*. Professor OSTRANDER

Second semester, four hours a week; differential and integral calculus. Osborne's *Calculus*. Professor OSTRANDER

PHYSICS

Sophomore year, first semester, four hours a week; elementary mechanics of solids, liquids and gases, heat, and sound. Dana's *Elementary Mechanics*, Carhart's *University Physics*.

Professor HASBROUCK

Second semester, four hours a week; electricity, magnetism, and light. Carhart's *University Physics*.

Professor HASBROUCK

Senior year, elective for those students who have taken junior

mathematics; first semester, four hours a week; analytic mechanics. Peck's *Analytic Mechanics.*

Professor HASBROUCK

Second semester, four hours a week; laboratory work.

Professor HASBROUCK

CIVIL ENGINEERING AND SURVEYING

Sophomore year, second semester, two exercises of two hours a week. Plain surveying with field work, including the use of the usual surveying instruments. *Surveying Manual*, Pence and Ketchum. Professor OSTRANDER

Instruction in Civil Engineering will be given in two distinct courses of one year each, the courses alternating. They will be open to students of the junior and senior classes as indicated below. The course for 1904-5 will be for students in mathematics only. First semester, three hours recitation and two hours draughting a week; stresses in roofs, bridges and graphic statics. Merriman and Jacoby's *Roofs and Bridges*, Parts I and II.

Second semester, four hours a week; hydraulics and sanitary engineering. Merriman's *Hydraulics and lectures.*

Professor OSTRANDER

The course of 1905-6 will be required of juniors and seniors taking the courses in mathematics and landscape gardening.

First semester, four hours a week; strength of materials, foundations and masonry construction. Text-book and lectures.

Professor OSTRANDER

Second semester, three hours recitation or lectures and two hours field work or draughting a week; topographic and higher surveying, highway construction and the measurement of earth work pavements and railroad construction. Text-book and lectures. Professor OSTRANDER

DRAWING

Junior year, first semester, two two-hour sessions a week for students in mathematics, and landscape gardening; free hand drawing.

Second semester, two two-hour sessions a week, mechanical and topographic drawing.

ENTOMOLOGY

The importance of a knowledge of insects in every department of life is recognized by placing an introductory course in this subject as a required study in the junior elective courses—(1) agriculture, (2) horticulture, (3) biology, (4) landscape gardening. For those who desire a further knowledge of it, because of its importance to their future occupations, a senior elective is offered, so shaped as to be of especial value for those who expect to take up agriculture, horticulture, landscape gardening, forestry, or science teaching, as life occupations.

Junior year, second semester, four exercises a week, of two hours each; lectures, laboratory, and field work: general consideration of insect structure and life histories; systematic study of the groups of insects with particular reference to those of economic importance; methods for preventing or checking their ravages; insecticides and apparatus for their use; the collecting, mounting, and naming of insects, and examination of the work of insects in the field and laboratory.

Professor H. T. Fernald

Senior year, (elective), first and second semesters, four laboratory exercises of two hours each a week; lectures, laboratory and field work: advanced morphology of insects; economic entomology; training in the determination of insects; use of literature on entomology; study of life histories; value and application of insecticides; thesis on insects most closely related to future occupation of the student.

Professors C. H. Fernald and H. T. Fernald

MODERN LANGUAGES

FRENCH.—Course I. Requires for the two semesters of the freshman year, four hours a week, first semester; four hours a week, second semester. The aim of this course is to enable the student to read modern French fluently, especially that found in scientific journals and treatises. The first ten weeks are devoted to gaining a thorough mastery of the accent and such principles of grammar and syntax as are covered by the first half of Whitney's *French Grammar*. Great stress is laid upon the acquisition of a correct accent, a good vocabulary and a thorough comprehension of the main idiomatic difficulties of the language. This course is further strengthened by constant drill in pronunciation, exercises, and composition.

Mr. HERRICK

Course II. Elective for both semesters of the senior year, four hours a week. The aim of this course is to equip the student with a general knowledge of classical literature, and a working knowledge of the language as it is spoken and written in the French capital to-day. Drill is furnished in composition, principles of syntax, and sight translation. Students electing Course II must have a good record in Course I or must pass a satisfactory examination therein. Mr. HERRICK

SPANISH.—Is given this year as a special elective for both semesters, four hours a week. The special aim is to enable students planning future fields of work in Spanish speaking countries to acquire sufficient speaking and writing knowledge of the Castilian dialect to enable them to start to best advantage. Especial attention is given to conversation, the method employed being that found in Marion and Garennes' *Introducción á la Lengua Castellana*. Grammar rudiments, accent and idiomatic difficulties are thoroughly studied; the acquisition of a good working vocabulary is insisted upon and the course is

further strengthened by practice in writing from dictation, constant drill in pronunciation, exercises and composition, and the reading of books characteristic of modern Spanish life and customs. Mr. HERRICK

GERMAN.—Course I. Required for both semesters of sophomore year, four hours a week first semester; three hours a week second semester. Facility in translation is the main object in view, with particular reference to scientific writings. The work consists of a study of the rudiments of grammar and of translation. Mr. HERRICK

Course II. Elective for both semesters of senior year, four hours a week. In this course special attention is given to the reading of German literature, particularly the literature pertaining to several branches of natural science. A student taking this course in connection with any science is expected to gain the ability to avail himself of the German literature of his subject, within reasonable limits.

Different books are used from year to year, but the following list will give you an idea of the nature of the work:

Course I. Joynes Meissner's *German Grammar*, Guerber's *Märchen und Erzählungen*, Hauff's *Das Kalte Herz*, Moser's *Der Bibliothekar*. Mr. HERRICK

Course II. Lessing's *Emilia Galotti*, and *Minna von Barnhelm*, Hodge's Courses in *Scientific Reading*.

Students electing Course II must have a good record in Course I, or must pass a satisfactory examination therein.

President GOODELL

MILITARY SCIENCE

In compliance with the provisions of an act of Congress, of July 2, 1862, military instruction under a regular army officer, detailed for this purpose, is required of all able-bodied male

students. Men are excused from attendance upon the exercises of this department only on a surgeon's certificate, given by Dr. Charles F. Branch, the college physician.

The object of such instruction is clearly to disseminate the elements of military knowledge throughout the country, that, in case of sudden emergency, a sufficient number of well-trained, educated men may be found to command and properly to instruct volunteer troops. Military drill also has the object in view of giving the student physical exercise, teaching respect and obedience to those in authority, without detracting from pride of manhood, and developing a military bearing and courtesy becoming in a citizen as in a soldier.

In order to further stimulate the study of Military Science in colleges the War Department issued General Orders No. 6, dated Washington, D. C., Aug. 24, 1903, as follows:

The reports of the regular inspections of the colleges and schools to which officers of the army are detailed, in pursuance of law, as principals or instructors, will annually hereafter be submitted to the General Staff for its critical examination, and the chief of staff will report to the Secretary of War, from the institutions which have maintained a high standard, the six institutions whose students have exhibited the greatest interest, application and proficiency in military training and knowledge. The President authorizes the announcement that an appointment as second lieutenant in the Regular Army will be awarded to an honor graduate of each one of the six institutions, provided sufficient vacancies exist after caring for the graduates of the Military Academy at West Point and the successful competitors in the annual examination of enlisted men. * * * * *

By order of the Acting Secretary of War.

Signed S. B. M. Young

Lieutenant General, Chief of Staff.

Course I. Out of doors, an exercise of one hour, three times a week, Mondays, Tuesdays, and Thursdays: infantry drill by squad, company, and battalion; guard mounting, dress parade, inspection, and review; artillery drill by detachment; target practice. A guard is mounted five times in each week and the guard maintained under practical instruction for one hour in each exercise.

All drills are in the drill hall during the winter months and inclement weather.

Students assigned to the college band are given instruction and practice in band music and band evolutions, in place of drills and recitations.

Course II. Theoretical instruction for freshmen, one hour a week for both semesters, comprises recitations in infantry drill regulations. *United States Service Manual.*

Course III. Theoretical instruction for seniors for both semesters, one hour a week, embraces drill and army regulations; duties of sentinels and guard duty; elements of military science; preparation of necessary reports and returns pertaining to a company of infantry; and a thesis on some military subject. Wagner's *Elements of Military Science.*

Captain Anderson

SYNOPSIS OF THE COURSES OF INSTRUCTION

The figures indicate the number of exercises a week; light faced type, recitation periods of one hour each; heavy faced type, laboratory periods of two hours each.

Freshman Year

First Semester

Language	English	3
	French	4
Mathematics	Algebra	5
Science	Agriculture	4
	Botany 2+1	3
Military	Tactics	1
History		2
		—22

Second Semester

Language	English	4
	French	4
Mathematics	Geometry and trigonometry,	4
Science	Anatomy and physiology half semester	4
	Chemistry half semester	
	Botany 1+1	2
History		2
		—20

Sophomore Year

First Semester

Language	English	4
	German	4
Physics		4
Science	Agriculture	4
	Chemistry	3
	Zoölogy 1+1	2
		—21

Second Semester

Language	English	4
	German	3
Physics		4
Surveying		2
Science	Agriculture 2+1	3
	Chemistry	2½
	Horticulture	3
		—21½

Junior Year

First Semester

Course in Agriculture	Agriculture **3**+**1**	4
	Botany **2**+1	3
	Chemistry	**3**
	Geology	3
	Horticulture	3
	English	4
		—20
Course in Horticulture	Horticulture	4
	Horticulture **1**+3	4
	Botany **2**+1	3
	Chemistry	**3**
	Geology	3
	English	4
		—21
Course in Biology	Zoölogy **3**+1	4
	Botany **2**+1	3
	Chemistry	**3**
	Geology	3
	Horticulture	3
	English	4
		—20
Course in Chemistry	Chemistry	**4**
	Agriculture 3+**1**	4
	Mathematics	4
	Geology	3
	English	4
	Special subject	**2**
		—21
Course in Mathematics	Analytical geometry	4
	Engineering **1**+3	4
	Free hand drawing	2
	Landscape gardening	4
	Geology	3
	English	4
		—21
Course in Landscape Gardening	Landscape gardening	4
	Agriculture 2+**1**	3
	Botany **2**+1	3
	Free hand drawing	2
	Horticulture	3
	Geology	3
	English	4
		—22

Second Semester

Course in Agriculture	Agriculture 2+1	3
	Botany 2+1	3
	Chemistry	4
	Horticulture	2
	Entomology	4
	Economics	4
		—20
Course in Horticulture	Horticulture	4
	Botany 2+1	3
	Chemistry	4
	Landscape gardening	2
	Entomology	4
	Economics	4
		—21
Course in Biology	Entomology	4
	Zoölogy	3
	Botany 2+1	3
	Chemistry	4
	Horticulture	2
	Economics	4
		—20
Course in Chemistry	Chemistry	5
	Agriculture 2+1	3
	Mathematics	4
	Economics	4
	Special subject	5
		—21
Course in Mathematics	Engineering	5
	Mathematics	4
	Mechanical drawing	2
	Landscape gardening	4
	Economics	4
		—19
Course in Landscape Gardening	Landscape gardening	4
	Botany 2+1	3
	Mechanical drawing	2
	Engineering	5
	Entomology	4
	Economics	4
		—22

Senior Year

First Semester

The following subjects are required in all courses:

Bacteriology, half semester **4**	
Constitution of the United States, half semester 4	4
Military science	1
	—5

Second Semester

Constitution of the United States	4
Military science	1

From the following the student must elect three courses, closely correlated with his junior year course. Only one course in language can be elected.

Agriculture	4	Entomology **3+1**	4	English	4
Horticulture **3+1**	4	Chemistry **3+1**	4	French	4
Veterinary	4	Physics	4	German	4
Botany **3+1**	4	Engineering	4	Spanish	4
Landscape gardening	4			Latin	4

Courses of Instruction

FOR THE DEGREES OF MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY

Applicants are not eligible to the degree of Master of Science or of Doctor of Philosophy until they have received the degree of Bachelor of Science or its equivalent.

COURSES FOR THE DEGREE OF MASTER OF SCIENCE

A course of study is offered in each of the following subjects: mathematics and physics, chemistry, agriculture, botany, horticulture, entomology, veterinary science. Upon the satisfactory completion of any two of these the applicant receives the degree of Master of Science.

Candidates for the degree of Master of Science must devote not less than one year and a half after graduation to the prosecution of two studies for the degree, one year of which must be in residence at the Massachusetts Agricultural College.

COURSES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

The degree of Doctor of Philosophy is conferred upon candidates who shall have spent three years of graduate work in this institution and satisfactorily completed a major subject and two minor subjects. Botany, chemistry, entomology or horticulture may be selected as the major. The minors available are botany, chemistry, entomology, horticulture, and zoölogy.

At least three years is necessary to complete the work required: twenty hours per week to be devoted to the major

subject, and from twelve to sixteen to be given to each minor during one and a half years.

A general outline of the work assigned for the major study in each subject is as follows:

Botany. Vegetable physiology, vegetable pathology, mycology, œcology, taxonomy, phylogeny, the history of botany, and the history and theory of evolution. The above subdivisions of botany will be to a greater or less extent, pursued as necessitated by the previous training of the student and nature of the original problem undertaken. In this course, it is also recommended that the student take, in addition to this prescribed minor work, a brief course in the history of philosophy and psychology which at present will have to be provided elsewhere. Extensive reading of botanical literature, of both a general and specific nature, will be required, in certain subjects, and occasional lectures will be given. A botanical conference is held monthly wherein various new problems touching upon botanical science are considered by graduate students and those of the senior class electing botany. A thesis dealing with some economic problem in plant physiology or pathology, or both, and containing a distinct contribution to knowledge will also be required.

Chemistry. Advanced work in the following subjects: inorganic analysis, qualitative, of the rarer elements, and quantitative; crystallography; physical chemistry; descriptive and determinative mineralogy; chemical geology; soil formation; soil physics and chemistry; gas analysis; synthetic inorganic work; chemical theory and history; general organic chemistry; special topics in organic chemistry; elementary quantitative organic analysis; proximate qualitative and quantitative organic analysis, including determination of organic radicles; organic synthesis of aliphatic and aromatic compounds;

problems in chemical manufacture; recent chemistry of plant nutrition; animal physiological and pathological chemistry, including foods, standards for feeding of all kinds, and among secretions, milk and milk industries and among excretions, urine and urinalysis; toxicology; insecticides and fungicides; frequent examinations on current chemical literature.

Early in the course original work on some chemical subject pertaining to agriculture must be begun. The history and results of this work must be submitted before graduation in the form of a thesis containing a distinct contribution to knowledge.

Entomology. *General morphology of insects*: embryology; life history and transformations; histology; phylogeny and relation to other arthropods; hermaphroditism; hybrids; parthenogensis; pædogensis; heterogamy; chemistry of colors in insects; luminosity; deformities of insects; variation; duration of life.

Œcology: dimorphism; polymorphism; warning coloration; mimicry; insect architecture; fertilization of plants by insects; instincts of insects; insect products of value to man; geographical distribution in the different faunal regions; methods of distribution; insect migrations; geological history of insects; insects as disseminators of disease; enemies of insects, vegetable and animal, including parasitism.

Economic entomology: general principles; insecticides; apparatus; special cases; photography of insects and their work; methods of drawing for illustrations; field work on insects and study of life histories; insect legislation.

Systematic entomology: history of entomology, including classifications and the principles of classification; laws governing nomenclature; literature,—how to find and use it; indexing literature; number of insects in collections and existence (estimated); lives of prominent entomologists; methods of col-

lecting, preparing, preserving, and shipping insects; important collections of insects.

Journal club: assignments of the literature on the different groups of insects to different students who report at monthly meetings summaries of all articles of value which have appeared during the month.

Required readings of the best articles on the various topics named above and on the different orders of insects. This reading covers from 15,000 to 20,000 pages in English, French, and German, and the candidate is examined on this together with his other work at the close of his course.

Thesis: A thesis with drawings, which shall consist of the results of original investigation along one or several lines, and which shall constitute a distinct contribution to knowledge, must be completed and accepted before the final examinations are taken.

Horticulture. The work in horticulture necessarily varies considerably with different candidates, since its most important features are specialization, original investigation, and the development of individual initiative in dealing with new questions. Each candidate must select some special field of horticultural study, and devote himself continuously to it. He will be required to attend lectures, conferences, and seminars, dealing with horticulture in its broader aspects. Advanced work will be required in the following subjects: systematic pomology, pomological practice, commercial pomology; systematic, practical, and commercial olericulture; greenhouse plants and problems; floriculture; landscape gardening; plant breeding and general evolution; and questions of a physiological nature connected with propagation and pruning.

Other requirements and opportunities are (1) periodical seminars with special lectures, by prominent men from outside the

college; (2) extensive and systematically planned readings; (3) frequent visits to orchards, gardens, greenhouses, estates, and libraries outside the college grounds, always with some definite purpose in view; (4) and finally, the preparation and publication of a thesis setting forth the results of the candidate's major study, which shall be an original and positive contribution to horticultural knowledge.

Courses of Instruction

FOR SPECIAL STUDENTS

A TWO YEARS' COURSE FOR WOMEN

Women are received who wish to pursue the studies named below. There is no charge for tuition. Board may be obtained in the Dining Hall and also rooms, so far as the accommodations will permit.

First year, first semester: soils, fertilizers and cultivation, four hours a week; elementary botany, five hours; French, four hours; free hand drawing, four hours.

Second semester: propagation and pruning (horticulture, one hour) three hours; botany: morphology, plant analysis, five hours; chemistry, descriptive, five hours; vegetable gardening, four hours; French, four hours.

Second year, first semester: pomology, three hours a week; greenhouse construction and management, three hours; botany: structure and physiology of plants, five hours; zoölogy, two hours; chemistry, five hours; German, four hours.

Second semester: landscape gardening, three hours a week; floriculture, four hours; vegetable pathology, five hours; entomology, three hours; chemistry, five hours; German, three hours.

SHORT COURSES

These courses are open to persons of both sexes. Applicants must be at least sixteen years of age, and must furnish papers certifying good moral character. No entrance examination is required.

Tuition is free to citizens of the United States. The same privileges in regard to room and board obtain as with other students. Attendance upon chapel is required. The usual fees are charged for apparatus and material used in laboratories. Attendance upon military drill is not expected.

I. Dairy Farming

	Hours a week
Soils, tillage, and methods of soil improvement: manures and fertilizers and their use; crops and rotations	4
Breeds and breeding of dairy stock; judging to scale of points	2
Fodders and feeding farm live stock	1
Stable construction and sanitation	1
Common diseases of stock; prevention and treatment	1
Dairy products, their general characteristics, testing	2
Chemical composition of milk and of special milk products	1
Botany	2
Horticulture	3
Entomology	3
Dairy practice, including testing, use of separators, buttermaking, preparation of certified and modified milk and pasteurization	4
Practice in horticulture	1

Begins first Thursday in January and continues ten weeks.

II. Horticulture

	Hours a week
Soils, tillage, manures, etc.	4
Plant propagation and pruning	3
General fruit growing	3
Market gardening	3
Botany	4
Entomology	3
Practice work in seed testing, seeding, grafting, budding, transplanting, judging fruit, etc.	

Begins first Wednesday in January; continues ten weeks. This course will not be given unless at least eight men register for it.

III. A Short Course in Bee Culture

This course begins the fourth Wednesday in May and continues

two weeks, but will not be given unless applied for by at least six students.

	Total hours
The structure of bees, with special reference to their work . . Professor H. T. FERNALD	5
Flowers and fruits in their relations to bees . . . . . Professor STONE	10
Honey crops and how to grow them . . . . . Professor BROOKS	5
Bees and bee keepers' supplies . . . . . Professor PAIGE	10
Work in the apiary, under direction of an expert	20
Instruction by specialists	4

Equipment of the Several Departments

AGRICULTURE

The part of the college estate, assigned to the department of agriculture contains 160 acres of improved land, 40 acres of pasture, and 16 acres of woodland. The latest inventions in improved agricultural tools and machinery are in practical use. The large and commodious barn and stables are stocked with the best breeds of horses, cattle, sheep, and swine. Attached to the barn is a dairy building equipped with the latest machinery driven by an electric motor. The museum contains a collection of implements, seeds, plants, and models of animals, all of which are designed to illustrate the evolution of agriculture. Three large lecture rooms, one in South College, and two in the dairy building have been assigned to this department.

The laboratory is provided with a full line of the latest and most highly improved apparatus for the study of the physical properties and the mechanical analysis of soils. Space for the indoor study of farm-machinery in motion is provided. A dynamometer for determination of the draft of machines and implements; surveyor's instruments for use in drainage problems; and microscopes and germination apparatus for use in seed examination are among the more important of the accessories in this department.

HORTICULTURE AND LANDSCAPE GARDENING

For illustration of the science and the practice of horticulture, the department possesses about 100 acres devoted to orchards planted with the leading old and new varieties of

apples, pears, peaches, plums, cherries, quinces, chestnuts, hickory-nuts, and walnuts; vineyards containing nearly 200 named varieties of grapes, besides many seedlings, and about an acre devoted to a commercial crop of a few market varieties; nurseries containing many kinds of fruit and ornamental trees, shrubs, and plants, in all stages of growth, from the seed and cuttings to those ready for planting out; and small fruit plantations of considerable diversity and extent. Several acres of excellent garden land are devoted to the growing of all the common types of vegetables. All these plantations, as far as possible, are managed according to the best practical and commercial methods, so that students may learn to know not merely the plants themselves but the best methods of handling them at a profit.

There are large well-stocked glass houses to illustrate the principles of greenhouse construction and management. These houses contain a large collection of the economic plants of the world, and also small commercial supplies of those plants such as carnations and chrysanthemums, commonly grown for market. Vegetable growing under glass is practiced to an extent necessary for purposes of illustration.

A fine arboretum of trees and shrubs, native and exotic, furnishes material for the study of students in landscape gardening. Gardens of hardy and tender plants are being continually extended. Actual work in practical landscape gardening, laying drives and walks, planning and planting various areas, is constantly in progress on the college campus.

CHEMISTRY

This department has fourteen rooms well adapted to their special uses. They are supplied with a large assortment of apparatus and chemical materials. The lecture-room on the

second floor has a seating capacity for seventy students. Immediately adjoining it are four smaller rooms used for storing apparatus and preparing materials for the lecture table. The laboratory for beginners is a large room on the first floor furnished with forty working tables. Each table is provided with reagents and apparatus for independent work. A well equipped laboratory for advanced work is also provided on the first floor. A weighing room has six balances and improved apparatus for determining densities of solids, liquids, and gases. The apparatus also includes a microscope, a spectroscope, a polariscope, a photometer, a barometer, and numerous models and sets of apparatus. The various rooms are furnished with an extensive collection of industrial charts. A valuable and growing collection of specimens and samples, fitted to illustrate different subjects taught, is also provided. This includes rocks, minerals, soils, raw and manufactured fertilizers, foods, including milk products, fibres, and other vegetable and animal products, and artificial preparations of mineral and organic compounds. Series of preparations are used for illustrating the various stages of different manufactures from raw materials to finished product.

GEOLOGY

Geological teaching is illustrated by a very complete series of minerals, the state collection of rocks of Massachusetts, a series of Ward's fossils and casts of fossils, models, and charts.

ZOÖLOGY

Zoölogical laboratory.—A large, well-lighted room, situated in the chemical laboratory, is fitted with necessary tables, trays, and general apparatus, microscopes, dissecting instruments, hand-lenses, and the like. There have lately been added

aquaria, in which, as far as possible, the various types studied may be seen in their natural environment. A reference library is kept in the laboratory.

Zoölogical lecture room.—An ample lecture room is situated in South College, adjacent to the museum. It is supplied with a set of Leuckart charts and many special ones as well, and with a complete set of Auzoux models illustrative both of human and comparative anatomy. A special set of typical specimens are being set apart for class illustration, although the more extensive museum collection is drawn upon for the same purpose.

Museum of zoölogy.—The museum is mainly for the purpose of exhibiting those forms treated of in the lecture and laboratory courses, but, in addition to this, the aim has been to show as fully as possible the fauna of the Commonwealth and those types which show the evolution and the relationship of the members of the animal kingdom. The total number of specimens contained in the museum now exceeds eleven thousand. The museum is open to the public from 3-30 to 5-30 P. M., each week day.

Entomological laboratory.—The equipment for work in entomology during the senior year and for graduate students is unusually good. The laboratory building contains a large room for laboratory work, provided with tables, dissecting and compound microscopes, microtomes, reagents, and glass ware. One portion of the building is fitted up as a lecture room. Another room is devoted to library purposes, and contains a card-catalogue of nearly fifty thousand cards, devoted to the literature of insects. In addition to a well-selected list of entomological works in this room, the college library has an unusual number of rare and valuable books on this subject. This is supplemented by the private entomological libraries of the profes-

sors in charge, which contain over twenty-five hundred volumes, many of which cannot be found elsewhere in the United States. In another room is a large and growing collection of insects, both adult and in the early stages, which is of much assistance to the students. As the laboratory is connected with the insectary of the Hatch Experiment Station, the facilities of the latter are directly available. The apparatus room of the insectary, with its samples of spray pumps, nozzles, and other articles for the practical treatment of insects; the chemical room, fitted up for the analysis of insecticides, and other chemico-entomological work; and a greenhouse, where plants infested by injurious insects are under continual observation, and experimental treatment,—all these are available to the student. In addition, several private laboratory rooms and a photographing room with an unusually good equipment of cameras are provided. The large greenhouses, grounds, gardens, and orchards of the college are also to be mentioned under this head, providing for study, as they do, a wide range of subjects relating to the attacks of injurious insects under natural conditions.

VETERINARY SCIENCE

The department has for its sole use a commodious and modern laboratory and hospital-stable erected in 1899. Both buildings are constructed according to the latest ideas as regards sanitation. Every precaution has been taken in the arrangement of details to prevent the spread of disease, and to provide for effective heating, lighting, ventilation, and disinfection.

The laboratory building contains a large working laboratory for students' use, and several small private laboratories for special work. In addition there are a lecture hall, museum,

demonstration room, photographing room, and work shop. The hospital stable contains a pharmacy, operating hall, post-mortem and dissecting room, besides a section for poultry, one for cats and dogs, and six sections separated from each other, for the accommodation of horses, cattle, sheep, swine, and other domestic animals.

The laboratory equipment consists of a dissecting Auzoux model of the horse, Auzoux models of the foot and the legs, showing the anatomy and the diseases of every part. There are skeletons of the horse, cow, sheep, dog, and pig, and in addition a growing collection of anatomical and pathological specimens. The lecture room is provided with numerous maps, charts, and diagrams, which are made use of in connection with lectures and demonstrations.

The laboratories are supplied with the most modern, high-power microscopes, microtomes, incubators, sterilizers, for the use of students taking the work in bacteriology and parasitology.

BOTANY

The botanical department possesses a general laboratory furnished with tables and benches for microscopic and physiological work and with a dark closet for photographic purposes. There are forty-six compound microscopes, thirty dissecting microscopes, a micro-photographic and landscape camera, and various accessories; also microtomes, paraffine baths, etc., for histological work; a large and useful collection of physiological apparatus for the study of photo-synthesis, respiration, metabolism, transpiration, heliotropism, and other irritable phenomena connected with plants; a set of apparatus for the study of the mechanical constituents of the soil, and for experimental work in soil physics. The laboratory is equipped with various

devices for the study of mechanics of plant structure; several types of self-registering auxanometers used to measure the rate of growth of plants; self-registering thermometers, and hygrometers for recording constant changes in conditions.

Botanical lecture room.—The botanical lecture room adjoining the laboratory is adapted for general work in morphology and flower analysis with opportunity to use dissecting microscopes.

Botanical museum.—Directly over the botanical lecture room is a museum. It contains a collection of valuable material now undergoing rearrangement and enlargement. There is a collection of spraying solutions; an economic collection of seeds, the principal Massachusetts timber trees, with photographs and sections of the same, and many cases of interesting examples of natural and artificial grafts, girdlings, etc.

Connected with the museum is an herbarium containing about 15,000 species of flowering plants and ferns, 1,200 species of mosses, 1,200 species of lichens and liverworts, and 12,000 species of fungi, the latter collection being housed in the vegetable pathology building at the experiment station.

Adjacent to the botanical laboratory and lecture room are named collections of native and exotic trees. The various conservatories of the college and the experiment station representing over 13,000 square feet of ground surface devoted to the cultivation of a large variety of exotic plants are also available.

MATHEMATICS, PHYSICS, AND ENGINEERING

SURVEYING

The department possesses a considerable number of the usual surveying instruments with the use of which the students are required to become familiar by performing a required

amount of field work. Among the larger instruments are two plain compasses, railroad compass with telescope, surveyor's transit, two engineer's transits with vertical arc and level, solar compass, omnimeter with verniers reading to ten seconds, adapted to geodetic work, Queen plane table, two wye levels, dumpy level, builder's level, sextant, hand level, and a large assortment of leveling rods, flag poles, chains, tapes, etc. For draughting, a vernier protractor, pantograph, parallel rule, etc., are available.

PHYSICS

Among the apparatus in use for general instruction in general physical processes may be found a set of United States standard weights and measures, precision balances, spherometer, vernier calipers, etc.; in mechanics, apparatus to illustrate the laws of falling bodies, systems of pulleys and levers, motion on an incline plane, and the phenomena connected with the mechanics of liquids and gases. The usual apparatus for lecture illustration in heat, light, and sound are also in the possession of the department. In electricity, the equipment consists of apparatus for both lecture illustration and laboratory work, among which may be enumerated a full set of Weston ammeters, and volt meters, a Carhart-Clark standard cell, Mascart quadrant electrometer, Siemens electro-dynamometer as well as reflecting galvanometers and Wheatsone bridges for ordinary determinations of currents and resistance.

MILITARY SCIENCE

In addition to a large campus, suitable for battalion drill, the military department possesses a special building in which there is a drill room 60 by 135 feet, an armory, a recitation room, an office for the commandant, and a field-gun and gallery

practice room. The building also has a large bathroom immediately adjoining the armory.

In a plot of ground north of the college buildings there is a rifle range, marked for practice at distances of 100 and 200 yards. The range is furnished with a revolving target suitably protected by earthworks. The national government supplies, for the use of the department, arms and equipments: the Springfield cadet rifle and two breech-loading rifled steel guns, calibre 3.2, with complete equipments and ammunition.

The State supplies instruments for the college band.

Students are held responsible for all articles of public property while in their possession.

THE CHAPEL-LIBRARY BUILDING

One of the most attractive and commodious buildings belonging to the college is the chapel-library. It has a commanding position, approximately in the center of the group of buildings adjoining the campus. The chapel occupies the entire second story. A large room, capable of seating about four hundred, is used for daily prayers, Sunday services, the various commencement exercises, and not infrequently for lectures or social gatherings. The room has an excellent pipe-organ. Two adjoining rooms are used for small religious gatherings, and meetings of the class teachers and of the faculty. The rooms can be thrown open so as to become a part of the main audience hall.

The entire lower story is given over to the library. This library is available for reference or investigation, and is open daily, except on Sundays, from 8 A. M. to 5 P. M. and from 6-30 to 8-30 P. M. It is open on Sundays from 10 A. M. to 1 P. M. The volumes at present number 24,534. The library contains carefully selected books in the departments of agriculture, hor-

ticulture, botany, entomology, and other natural sciences. Sociology, economics, history, literature, the fine arts, and the useful arts are well represented. Constant additions will be made to secure the latest and best works in the several departments of learning.

DINING-HALL

A colonial dining-hall, built of brick and equipped with all modern conveniences, was completed and opened February, 1903, for the accommodation of students. A committee composed of two members of the faculty, two members of the student body, and the steward, manages the affairs of the dining-hall,

The hall contains a number of suites of rooms which may be secured for occupancy by young women attending any of the departments of the college.

THE HEATING, LIGHTING, AND POWER PLANT

This plant is located in the ravine near the chemical laboratory. It is equipped with two large boilers, an engine, and an electric generator. Here steam is generated which heats the college buildings on the west side of the public highway, extending from the dining hall to veterinary laboratory. Here also is produced the electricity which lights all the buildings and the grounds of the college. Electric power is also generated which is used to drive the machinery in the dairy and in the barn. Connected with the plant is a machine shop in which much work is done for the college. The plant affords opportunity for students in mechanical and electrical engineering to observe the modern utilization of steam and of electricity.

General Information

DORMITORIES

Students are expected to occupy rooms in the college dormitories unless excused to room elsewhere.

In North College and South College rooms, unfurnished, are arranged in suites of three. Each apartment consists of one study room and two bedrooms. In North College the corner rooms are 14 by 15 feet, and the annexed bedrooms 8 by 10 feet. The inside study rooms are $13\frac{1}{2}$ by $14\frac{1}{2}$ feet, and the bedrooms 8 by 8 feet. In South College the study rooms are 14 by 15 feet with a recess $7\frac{1}{3}$ by 3 feet, and the bedrooms $11\frac{1}{6}$ by $8\frac{5}{12}$ feet. Both buildings are heated by steam and lighted by electricity.

Students are required to care for their rooms. Military inspection by the commandant takes place every Saturday morning at 8-30 o'clock.

Rent varies according to the building and the location from $15 to $45 a year. Steam heat costs $12 yearly. Lights cost $12 yearly. Board is furnished in the college dining hall at present for $3.25 a week. Rooms in the dining-hall are reserved for women who are students in any department of the college. The rent is $18 a semester; light and heat extra, $12 each per semester.

Correspondence relative to the engaging of rooms should be addressed to Thomas Canavan, the janitor.

EXPENSES

Room rent, in advance .	$15.00	$45.00
Board, $3.25 to $4 per week .	117.00	144.00
Fuel	13.00	13.00
Washing, 30 to 60 cents a week	11.00	22.00
Military suit . . .	12.50	20.00
Lights . . .	12.00	12.00
	$180.50	$256.00

In addition to the above expenses, $80 tuition is charged to foreigners.

The military suit must be obtained immediately upon entering college, and used in the drill exercises prescribed. The following fees are applied towards the maintenance of the several laboratories: chemical, $15 per semester used; zoölogical, $2 per semester used sophomore year; other classes $4 per semester; entomological, $3 per semester used. The fee for use of the botanical laboratory for two periods of one hour during each week is $1 per semester. Other periods will be charged for proportionally. Some expense is also incurred for text-books. In exceptional cases incidental expenses necessitate additional charges.

THE LABOR FUND

An annual appropriation of $5000 is received from the State. The object of this fund is to assist those students who are residents of Massachusetts and are dependent either wholly or in part on their own exertions, by furnishing them work in the several departments of the college. The greatest opportunity for such work is found in the agricultural, and the horticultural department.

Application for participation in the benefits of the labor fund should be made to the president of the college. Students

desiring to avail themselves of its benefits must bring a certificate signed by one of the selectmen of the town in which they are resident, certifying to the fact that they require aid.

SELF-HELP

Good opportunities are afforded for self-support in part to those students who choose to avail themselves of them. But much depends upon the determination and the ability of the student applying for work. Some exceptional men have succeeded in paying their way through college. Not a few have paid a large share of their necessary expenses. Many have earned a small part of the cost of their college course. But in every case the student should have funds enough to pay his way until he can adapt himself to his new environment and show what he is capable of earning. The long summer vacation allows the student to earn good wages at home or elsewhere. There are no college exercises on Saturdays so that work for wages may then be performed. But no student should attempt to engage in work that will interfere with his success in his studies. The labor fund is employed in paying for the labor of students who require work, but the fund is limited and the college cannot promise employment to all applicants. Each case must be determined according to the circumstances of the time and the qualifications of the man.

RELIGIOUS SERVICES

Chapel services are held every week-day except Saturday at 8 A. M. A religious meeting Thursday evening, under the auspices of the College Young Men's Christian Association is held in the chapel. Students are expected to attend divine service on Sunday with the churches of their choice in town, where a cordial welcome is accorded them.

FELLOWSHIP

A fellowship under the title of "Instructor in Chemistry" is offered to a recent graduate who desires, in connection with his regular duties as instructor, to carry on advanced work for one or more years.

SCHOLARSHIPS

ESTABLISHED BY PRIVATE INDIVIDUALS

Mary Robinson fund of one thousand dollars, the bequest of Miss Mary Robinson, of Medfield.

Whiting Street fund of one thousand dollars, the bequest of Whiting Street, Esq., of Northampton.

Henry Gassett fund of one thousand dollars, the bequest of Henry Gassett, Esq., of North Weymouth.

The income of these funds is assigned to worthy students requiring aid.

Tuition is free to citizens of the United States. Citizens of Massachusetts however, in accordance with an act of the Legislature, must make application to the senator of the district in which they live for a free scholarship that covers the charges for tuition. Blank forms of such application may be obtained from the president of the college.

DEGREES

No honorary degrees are conferred.

Those who complete the four years' course will receive the degree of Bachelor of Science. The diploma is signed by the governor of the Commonwealth as well as by the president of the college.

Those who receive this degree may receive also the degree of Bachelor of Science from Boston University, for which a fee

of ten dollars is charged; provided that the candidate in addition to the college course shall have mastered in a preparatory school a three years' preparatory course in studies beyond those commonly presented in the grammar schools of Massachusetts.

Those who complete the assigned courses will receive the degree of Master of Science for which a fee of ten dollars must be paid to the treasurer of the college.

Those who complete the three years' course of study required and present a satisfactory thesis will be given the degree of Doctor of Philosophy. The fee for this degree is twenty-five dollars.

Those to whom degrees are awarded must present themselves in person at commencement to receive them.

Prizes

The following prizes are offered annually for proficiency in the work of several of the departments of collegiate study:

AGRICULTURE

The Grinnell prizes, the first of twenty-five dollars, and the second of fifteen dollars, given by Hon. William Claflin, of Boston, in honor of George B. Grinnell, Esq., of New York, to those members of the senior class who produce the best and the second best examinations, oral and written, in theoretical and practical agriculture.

BOTANY

The Hills prizes of thirty-five dollars, given by Henry F. Hills of Amherst, will this year be awarded to members of the senior class as follows: fifteen dollars for the best general herbarium, fifteen dollars for the best collection of Massachusetts trees and shrubs, and five dollars for the best collection of Massachusetts grasses.

ENGLISH

The Flint prizes, the first of thirty dollars, and the second of twenty dollars, given by Mr. Charles L. Flint, of Boston, of the class of 1881, to those members of the junior class, under certain restrictions, who produce the best and the second best orations. Both composition and delivery are considered in making the award.

The Burnham prizes, amounting in all to eighty dollars, given by the late T. O. H. P. Burnham, of Boston, to members

of the sophomore, and the freshman class, for excellence in composition work and in declamation. Composition work, in competition for these prizes is confined to the second semester of the sophomore year. Under certain restrictions, a first prize of twenty dollars, a second prize of ten, and a third prize of five are awarded. Declamation work, in competition for these prizes is confined to the second semester of freshman year. Under certain restrictions, a first prize of twenty-five dollars, and a second prize of twenty are awarded.

SPECIAL PRIZES

Special prizes are occasionally offered by various departments.

MILITARY DIPLOMAS

The commandant is authorized to give military diplomas, countersigned by the president of the college, to those men receiving the degree of Bachelor of Science who by their work in the military department during their course in college may have shown themselves worthy of distinction. These diplomas recommend those receiving them for commissions in the United States army or in the militia of the several states, vouching that they are fitted to fill the position of a commissioned officer.

WINTER COURSE PRIZES

The Dairy prizes, given by the Massachusetts Society for Promoting Agriculture, to members of the short winter course. Two sets of prizes are offered. The first set consists of three prizes of fifty, thirty, and twenty dollars, respectively, given for general excellence in all branches of the course as offered. The second set consists of three prizes of twenty-five, fifteen, and ten dollars, respectively, for excellence in the making of butter.

Award of Prizes

1902—1903

Grinnell Agricultural Prizes—Senior

First prize: Paul Nerses Nersessian
Second prize: Elmer Myron Poole

Hills Botanical Prizes—Senior

First prize: Albert Vincent Osmun
Second prize: Gerald Denison Jones

Flint Oratorical Prizes—Junior

First prize: Fayette Dickinson Couden
Second prize: George Edmund O'Hearn

Burnham Declamation Prizes—Sophomore and Freshman

First sophomore prize: William Hunlie Craighead
Second sophomore prize: George Howard Allen
First freshman prize: Vernon Ollise White
Second freshman prize: Alonzo Henry Shannon

Military Honors—Senior

The following cadets were reported to the Adjutant General U. S. Army, and to the Adjutant General of Massachusetts, as having shown special aptitude for military service:

William E. Allen
George L. Barrus
Neil F. Monahan

Short Course in Dairy Farming

Massachusetts Society for Promoting Agriculture: for general excellence: first prize, $50, Mrs. Sara E. Folsom; second prize, $30, Samuel W. Dorling; third prize, $20, Nelson Gerber.

Massachusetts Society for Promoting Agriculture: for highest scoring butter: first prize, $25, Clarence H. Stygles; second prize, $15, William A. Gage; third prize, $10, Samuel W. Dorling.

Massachusetts Society for Promoting Agriculture: for excellence in stock judging: first prize, $10, Samuel W. Dorling; second prize, $7.50, Elmer P. Ramsdell; third prize, $5, Herman Kohles; fourth prize, $2.50, James Gould.

Special prize offered by W. H. Bowker of Boston: for best knowledge of the use of fertilizers on the farm: one ton Stockbridge fertilizer, Mrs. Sara E. Folsom.

Special prize given by B. von Herff, New York: for best knowledge of the use of fertilizers on grass lands: one ton kainite; William A. Gage.

Degrees Conferred in 1903

DOCTOR OF PHILOSOPHY

Morrill, Austin Winfield	Tewksbury

BACHELOR OF SCIENCE

Allen, William Etherington†	Winthrop
Bacon, Stephen Carroll†	Leominster
Barrus, George Levi†	Goshen
Bowen, Howard Chandler†*	Rutland
Brooks, Philip Whitney†*	Cambridge
Cook, Joseph Gershom†	Clayton
Franklin, Harry James†*	Bernardston
Halligan, Charles Parker†	Roslindale
Harvey, Lester Ford†	Woodbury, Conn.
Hood, William Lane†*	Vandiver, Ala.
Jones, Gerald Denison†*	South Framingham
Lamson, George Herbert†*	East Hampton, Conn.
Monahan, Neil Francis†	South Framingham
Nersessian, Paul Nerses†*	Marash, Turkey
Osmun, Albert Vincent†*	Danbury, Conn.
Parsons, Albert†	North Amherst
Peebles, William Warrington†	Washington, D. C.
Poole, Elmer Myron†*	North Dartmouth
Proulx, Edward George†	Hatfield
Robertson, Richard Hendrie†	Somerville
Snell, Edward Benaiah†	Lawrence
Tinkham, Charles Samuel†	Roxbury
Tottingham, William Edgar†	Bernardston
Tower, Winthrop Vose†	Melrose Highlands
West, Myron Howard†*	Belchertown
Total	25

*Degree of Boston University
†Military Diploma

Graduate Students

For the Degree of Ph. D.

Franklin, Henry James	Bernardston
B. Sc. Massachusetts Agricultural College 1903	
Hodgkiss, Harold Edward . . .	Wilkinsonville
B. Sc. Massachusetts Agricultural College 1902	
Osmun, Albert Vincent	Brooklyn, N. Y.
B. Sc. Massachusetts Agricultural College 1903	
Tottingham, William Edgar . . .	Bernardston
B. Sc. Massachusetts Agricultural College 1903	

Total 4

Special Students

TWO YEARS' COURSE FOR WOMEN

Hunt, Justine	*Newton*	Dining Hall

Russell, Ida Josephine	*Amherst*
Mills, Belle Ingalls Lovejoy	*Amherst*

Total 3

Undergraduate Students

SENIOR CLASS

Ahearn, Michael Francis	*South Framingham*	Plant House
Back, Ernest Adna	*Florence*	Insectary
Blake, Maurice Adin	*Millis*	10 South College
Couden, Fayette Dickinson	*Washington, D. C.*	17 South College
Elwood, Clifford Franklin	*Green's Farms, Conn.*	96 Pleasant St.
Fulton, Erwin Stanley	*Lynn*	Hatch Exp. Sta. Chemical
Gilbert, Arthur Witter	*West Brookfield*	11 South College
Gregg, John William	*Dorchester*	24 North College
Griffin, Clarence Herbert	*Winthrop*	14 South College
Haskell, Sidney Burritt	*Southbridge*	20 South College
Henshaw, Fred Forbes	*Templeton*	20 South College
Hubert, Zachary Taylor	*Pride, Ga.*	28 North College
Newton, Howard Douglas	*Stockbridge*	4 South College
O'Hearn, George Edmund	*Pittsfield*	27 North College
Parker, Sumner Rufus	*Brimfield*	Hatch Exp. Sta. Botanical
Peck, Arthur Lee	*Hartford, Conn.*	11 South College
Quigley, Raymond Augustine	*Brockton*	7 South College
Raymoth, Reuben Raymond	*Goshen*	D. G. K. House
Staples, Parkman Fisher	*Westboro*	12 South College
White, Howard Morgan	*Springfield*	9 South College
	Total	**20**

JUNIOR CLASS

Adams, Richard Laban	*Jamaica Plain*	E. M. Dickinson's
Allen, George Howard	*Somerville*	15 South College
Barnes, Hugh Lester	*Stockbridge*	4 South College
Bartlett, Francis Alonzo	*Belchertown*	116 Pleasant St.
Craighead, William Hunlie	*Boston*	28 North College
Crosby, Harvey Davis	*Rutland*	23 North College
Cushman, Esther Cowles	*Amherst*	31 North Prospect St.
Gardner, John Joseph	*Milford*	Plant House
Hall, Arthur William, Jr.	*North Amherst*	North Amherst
Hatch, Walter Bowerman	*Falmouth*	6 South College
Hill, Louis William	*Bridgeport, Conn.*	6 South College
Holcomb, Charles Sheldon	*Tariffville, Conn.*	5 South College
Hunt, Thomas Francis	*Amherst*	Hatch Exp. Station
Hutchings, Frank Farley	*South Amherst*	116 Pleasant St.
Ingham, Norman Day	*Granby*	12 South College
Kelton, James Richard	*Orange*	D. G. K. House
Ladd, Edward Thorndike	*Winchester*	D. G. K. House
Lewis, Clarence Waterman	*Melrose Highlands*	23 North College
Lyman, John Franklin	*Amherst*	D. G. K. House
Munson, Willard Anson	*Aurora, Ill.*	15 South College
Newhall, Edwin White, Jr.	*San Francisco, Cal.*	84 Pleasant St.
Patch, George Willard	*Arlington Heights*	16 South College
Richardson, Justus Cutter	*Dracut*	86 Pleasant St.
Sanborn, Monica Lillian	*Salem*	Dining Hall
Sears, William Marshall	*Brockton*	14 South College
Swain, Allen Newman	*Dorchester*	116 Pleasant St.
Taylor, Albert Davis	*Westford*	86 Pleasant St.
Tompson, Harold Foss	*Roxbury Crossing*	Veterinary Lab.
Tupper, Bertram	*Barre*	Hatch Experiment Station
Walker, Lewell Seth	*Natick*	24 North College
Whitaker, Chester Leland	*Somerville*	17 South College
Williams, Percy Frederic	*Natick*	5 South College
Willis, Grenville Norcott	*Becket*	16 South College
Yeaw, Frederick Loring	*Winthrop*	Hatch Exp. Sta. Botanical

Total 34

SOPHOMORE CLASS

Baird, Clarence Henry	*Holyoke*	96 Pleasant St.
Carey, Daniel Henry	*Rockland*	2 South College
Carpenter, Charles Walter	*Monson*	D. G. K. House
Chapman, George Henry	*New Britain, Ct.*	8 South College
Colton, William Wallace	*Pittsfield*	21 North College
Cutter, Frederick Augustus	*Pelham, N. H.*	9 South College
Farrar, Allan Dana	*Amherst*	21 Northampton Rd.
Ferren, Frank Augustus	*Peabody*	86 Pleasant St.
Filer, Harry Burton	*Dwight*	27 North College
French, George Talbot	*Tewksbury*	18 South College
Gaskell, Edwin Francis	*Hopedale*	Beers' House
Hartford, Archie Augustus	*Westford*	96 Pleasant St.
Hastings, Addison Tyler, Jr.	*Natick*	9 North College
Hayward, Afton Smith	*Amherst*	101 N. Pleasant St.
Hood, Clarence Ellsworth	*Millis*	7 North College
Jones, Louis Franklin	*Somerville*	56 Pleasant St
Kennedy, Frank Henry	*South Boston*	8 South College
Martin, James Edward	*Brockton*	2 South College
Moseley, Louis Hale	*Glastonbury, Conn.*	10 North College
Mudge, Everett Pike	*Swampscott*	12 North College
Paige, George R.	*Amherst*	6 North College
Peakes, Ralph Ware	*Newtonville*	10 South College
Pray, Fry Civille	*Natick*	14 North College
Racicot, Arthur Alphonse, Jr.	*Lowell*	25 North College
Rogers, Stanley Sawyer	*Boston*	D. G. K. House
Russell, Henry Merwin	*Bridgeport, Conn.*	10 North College
Scott, Edwin Hobart	*Somerville*	D. G. K. House
Sleeper, George Warren	*Swampscott*	86 Pleasant St.
Strain, Benjamin	*Mt. Carmel, Conn.*	9 North College
Suhlke, Herman Augustus	*Leominster*	D. G. K. House
Taft, William Otis	*East Pepperell*	8 South College
Tirrell, Charles Almon	*Plainfield*	Professor Cooley's
Watkins, Fred Alexander	*Peru*	6 North College
Wellington, Richard	*Waltham*	Beers' House
Wholley, Michael Francis	*Cohasset*	22 North College
Wood, Alexander Henry Moore	*Easton*	D. G. K. House
Wood, Herbert Poland	*Hopedale*	Beers' House

Total 37

FRESHMAN CLASS

Alley, Harold Edward	*Newburyport*	44 Triangle St.
Amsden, Eugene Charles	*Gardner*	1 Fearing St.
Armstrong. Arthur Huguenin	*Hyde Park*	44 Triangle St.
Barlow, Waldo Darius	*Amherst*	133 Main St.
Bartlett, Earle Goodman	*Chicago, Ill.*	44 N. Pleasant St.
Brydon, Robert Parker	*Lancaster*	26 North College
Caruthers, John Thomas	*Columbia, Tenn.*	24 North College
Chace, Wayland Fairbanks	*Middleboro*	1 Fearing St.
Chadwick, Clifton Harland	*Cochituate*	1 South College
Chapman, Joseph Otis	*Brewster*	1 Fearing St.
Chapman, William Spaulding	*Attleboro*	11 North College
Clark, Milford Henry, Jr.	*Sunderland*	36 Amherst House
Clementson, Lewis Towland	*Millbury*	Beers' House
Cowles, Edward Russell	*Deerfield*	101 Pleasant St.
Curtis, Jesse Gerry	*South Framingham*	123 Pleasant St.
Curtis, Walter Leon	*Scituate*	31 North College
Dearth, George Augustus	*Sherborn*	1 Fearing St.
Denham, Edwin Tirrell	*Rockland*	77 Pleasant St.
Dickinson, Walter Ebenezer	*North Amherst*	North Amherst
Dudley, Fred Samuel	*Montague*	1 Fearing St.
Eastman, Jasper Fay	*Townsend*	1 Fearing St.
Engstrom, Nils	*Lancaster*	26 North College
Finkelstein, David	*Philadelphia, Pa.*	
French, Vida Rachel	*Cincinnati, O.*	25 Sunset Ave.
Gould, Harry Wheeler	*Millbury*	Beers' House
Green, Herbert Henry	*Spencer*	1 Fearing St.
Hall, Walton, Jr.	*Marshfield*	116 Pleasant St.
Hanson, Stuart Waldo	*Boston*	31 North College
Higgins, Arthur William	*Westfield*	Mr. R. J. Goldberg's
Jones, Arthur Merrick	*Ludlow*	13 South College
Kalina, Jacob	*Amherst*	
King, Clinton	*Easton*	77 Pleasant St.
Knox, Harry Cobb	*Roxbury*	56 N. Pleasant St.
Lanigan, William Joseph	*Rockland*	
Larned, Adelbert Joseph	*Amherst*	Mill Valley, Amherst
Leighton, Carl	*Lowell*	25 North College

Leominster, William	*Longplain*	1 Fearing St.
Lincoln, Ernest Avery	*Fall River*	96 Pleasant St.
Livers, Susie Dearing	*Boston*	Dining Hall
Marran, Bernerd James	*Great Barrington*	
Parker, Charles Morton	*Newtonville*	56 Pleasant St.
Perkins, Edward Cook	*Springfield*	101 Pleasant St.
Peters, Frederick Charles	*Lenox*	13 South College
Philbrick, Edwin Daniels	*West Somerville*	1 South College
Pierce, Henry Tyler	*West Millbury*	Beers' House
Pray, Rutledge Peyton	*Natick*	14 North College
Raitt, John Archibald	*New York, N. Y.*	Dickinson House
Rice, Charles Arthur Allenham	*Springfield*	96 Pleasant St.
Russell, Herbert Osborne	*North Hadley*	North Hadley
Searle, George Whitney	*Westfield*	1 Fearing St.
Shaw, Chester Linus	*Brockton*	77 Pleasant St.
Shaw, Edward Houghton	*Belmont*	Allen St.
Shaw, Frank Elmer	*Brockton*	77 Pleasant St.
Shuttleworth, Edwin Lewis	*Lawrence*	12 Pleasant St.
Smith, George Franklin	*Barre*	1 Fearing St.
Stoddard, Calder Sankey	*Canton*	Allen St.
Summers, John Nicholas	*Campello*	97 Pleasant St.
Thompson, Clifford Briggs	*Halifax*	97 Pleasant St.
Walker, James Hervey	*Greenwich Village*	77 Pleasant St.
Watts, Ralph Jerome	*Littleton*	101 Pleasant St.
Whitney, John Frank	*Dana*	77 Pleasant St.
	Total	**61**

Summary

Graduates	4
Special students	3
Seniors	20
Juniors	34
Sophomores	37
Freshmen	61
Winter course, 1903	28
Total	—187

Alumni Associations

ASSOCIATE ALUMNI

Founded 1874

President, HERBERT MYRICK, '82, Springfield
Secretary, JAMES B. PAIGE, '82, Amherst

ALUMNI CLUB OF MASSACHUSETTS

Founded 1885

President, MADISON BUNKER, '75, Newton
Clerk, FRANKLIN W. DAVIS, '89, Roslindale

MASSACHUSETTS AGRICULTURAL COLLEGE CLUB OF NEW YORK

Founded 1886

President, CHARLES O. LOVELL, '78, New Rochelle, N. Y.
Treasurer, ALVAN L. FOWLER, '80, New York, N. Y.

WESTERN ALUMNI ASSOCIATION

President, EVERETT B. BRAGG, '75, Chicago, Ill.
Secretary, ARTHUR B. SMITH, '95, Chicago, Ill.

CONNECTICUT VALLEY ALUMNI ASSOCIATION

Founded 1902

President, R. W. LYMAN, '71, Northampton
Secretary, H. D. HEMENWAY, '95, Hartford

Class Secretaries

1871. E. E. Thompson, Worcester
1872. S. T. Maynard, Northboro
1873. C. Wellington, Amherst
1874.
1875. M. Bunker, Brighton
1876. C. F. Deuel, Amherst
1877.
1878. C. O. Lovell, New Rochelle, N. Y.
1879. R. W. Swan, Worcester
1880.
1881. J. L. Hills, Burlington, Vt.
1882. G. D. Howe, Portland, Me.
1883. S. M. Holman, Attleboro
1884. L. Smith, Springfield
1885. E. W. Allen, Washington, D. C.
1886.
1887. F. H. Fowler, Boston
1888.
1889. C. S. Crocker, Boston
1890. F. W. Mossman, Westminster
1891.
1892. H. M. Thomson, Thompson, Conn.
1893. F. A. Smith, Hopedale
1894. C. F. Walker, Montclair, N. J.
1895. H. A. Ballou, Barbadoes, W. I.
1896.

1897. C. A. Peters, Moscow, Idaho
1898. S. W. Wiley, Baltimore, Md.
1899. D. A. Beaman, Hartford, Conn.
1900. E. K. Atkins, Northampton.
1901. J. H. Chickering, Dover
1902. H. L. Knight, Amherst
1903. G. D. Jones, North Amherst

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